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ABSTRACT

Instructors at Lower Columbia College in Longview, Washington use computer-based simulation models in lower level business administration courses. Prior to use, teachers must select and obtain a simulation, discuss it with campus computer personnel, set an operations schedule, obtain the necessary supplementary material, and test run the program. Actual classroom implementation requires that small groups of students be formed and needed background information be presented. Following this, the groups compete to see which can make the most effective decisions in a given situation. Almost 90% of the students favor the use of the simulation, and experience has shown it to be an effective instructional technique. It provides for a realistic application of theory and principles, teaches students the value of intragroup processes and communication in competitive decision-making environments, and documents the relevance of subject matter in related fields. In addition, students are motivated to learn and are provided with an introduction to computer applications. (PB)

COMPUTER-BASED SIMULATION MODELS

for

COMMUNITY COLLEGE BUSINESS STUDENTS

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INTRODUCTION

Implicit in the Washington State Community College Plan for Computer Development is the goal of providing computer-based instructional offerings in Business Administration courses. Due to the increasing availability of computer-based simulation models, it is now possible for a community college instructor to provide an opportunity for freshmen and sophomore students to participate in interactive simulations normally reserved for upper division and graduate students. The student can participate in marketing strategy and forecasting, group decision-making, accounting analysis and control, management and finance, prior to obtaining a comprehensive knowledge of the subjects involved. This serves a dual purpose of motivating the students as well as providing them with a competitive experience.

All the significant elements necessary for an instructor to introduce computer-based simulation models into a business classroom will be discussed. Emphasis is placed on the ease of implementation and the resultant advantages of utilizing simulation models based on actual instructional experience.

THE NEED FOR COMPUTER-BASED SIMULATION MODELS IN THE BUSINESS CLASSROOM

Student Needs

A vehicle for conveying to the student a substantive body of knowledge, while at the same time providing a conceptual introduction to the computer and its capabilities.

Some means of providing an immediate application of classroom theory in a decision-making environment which will enhance the student's understanding and reinforce retention.

A means whereby business students may simulate complex managerial processes such as marketing strategy, forecasting, accounting and economic analysis, control, management, and finance.

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An alternative to the often distasteful and static activity of business case analysis, while retaining and enhancing the educational value of such activities.

An educational environment in which communication and group participation are significant elements of the decision-making process.

An endeavor which generates enthusiasm for both subject matter and underscores the relevancy of related curriculum.

Instructor Needs

A means of emphasizing the importance of subject matter to a student who has had no previous business courses.

A vehicle which will provide a significant educational experience and be student-centered and self-regulating, thereby freeing the instructor to introduce additional related material.

A technique which will allow the student to utilize the computer in a meaningful and rewarding manner while requiring minimal computer knowledge on behalf of the instructor or the student.

SIMULATION MODEL DESCRIPTION

The computer-based simulation model used in the classroom is a dynamic, objective, deterministic mathemathical model of a competitive oligopolistic industrial environment. Since the model is dynamic and interactive it allows the participants to simulate the competitive activitie of the industry in a condensed period of time. Thus, students may simulate 3 to 4 years of competition within the industry during the course of one academic quarter.

Although such simulations are abstract-mathematical models, no mathematic or programming expertise is required. The models discussed have already been converted to computer programs.

AVAILABILITY OF COMPUTER-BASED BUSINESS SIMULATION MODELS

Since the instructor desiring to introduce computer-based simulations into his class need not have special mathematical or computer background, his only real concern is that of selecting a model appropriate to his needs. A fairly complete listing of business games may be found in: Robt. Graham & Clifford Gray's Business Games Handbook (2).

Suggested games are described in 1, 3, 4, and 5 (Bibliography).

The above referenced business simulations may be used in introductory classes of Accounting, Management, Marketing, or Introduction to Business.

PREPARING THE COMPUTER-BASED SIMULATION FOR CLASSROOM USE

After an instructor has reviewed the simulations available and selected the one which will best suit his educational requirements and discussed the adoption with appropriate computer department personnel, he should immediately contact the publisher for all related materials and the name of a college or university with similar computer hardware. This enables personnel in his campus computer department to have direct access to someone who has the simulation model in operation. Unfortunately most publishers do not possess the required expertise to be of technical assistance. If no schools are available, contact the author via the publisher if you have any questions. A period of 90 days should be allowed for getting the program ready.

Most simulation 'packages' include a student's simulation text, instructor's manual with information concerning suggestions on how to introduce the game to the class, and possible methods of organizing and grading. Sample decisions and print-outs should also be included so that the instructor may be able to run the program under the same conditions as the author and compare his results. Occasionally program errors will exist and this approach provides an efficient method of identifying such problems.

The source computer program for the simulation is normally included and sent with the instructional materials. It is usually available in punched card form, compatible with several hardware configurations.

Since the campus computer personnel have already been consulted regarding the choice of program and compatibility with existing hardware, they should immediately test the program using the sample decisions provided from the publisher. Running the game on the computer for two or three decision periods is a good idea as it serves to enhance the instructor's knowledge of the game and often introduces additional variables that may not have existed during the first decision period. During this period of time, the instructor should determine if the decision form and print-outs are acceptable, and if not, what modifications he will require. Also, an operations schedule should be established with the computer personnel regarding the availability, form and number of printouts which will be required. Although it is possible for the instructor to keypunch and run his own program, it becomes quite time consuming and should therefore be handled by the data processing staff.

Supplemental Materials

Although most of the student texts provided by the publisher present little problem for upper division and graduate students, they are often insufficient with regard to the needs of the freshman and sophomore students. In most cases either prerequisite courses will have to be required, or supplementary materials will have to be provided by the instructor. The problem with prerequisites in community colleges is that they limit the availability of simulations to many students who might benefit the most from the experience.

If a decision is made to require no prerequisite courses, then it is realistic to assume that many freshman students with no business course background will be participating in the simulation and allowances will have to be made. Although a variety of possibilities are available for the supplementary materials such as slides, tapes, lectures, and lab sessions, this writer has found that a programmed workbook provides the availability, flexibility, and hands-on experience desired by students. The workbook is a learner-paced instrument.

The workbook is divided into three sections:

1. Programmed introduction to simulations, accounting marketing, management, economics, and finance.

2. A programmed introduction to the specific simulation in use, with analysis of sample printouts and decisions.

3. An Appendix with additional materials available pertinent to the simulation.

IMPLEMENTING THE SIMULATION IN THE CLASSROOM

After satisfactory results have been obtained from test runs and all the scheduling and form changes have been completed, the simulation is ready for classroom use. A personal profile should be obtained from each student to determine their educational and employment background so that they may be organized into groups (firms) on an equitable basis. It is a good idea to divide the class into firms as soon as possible so that they can begin to work together. Since some students will be apprehensive about the simulation due to lack of experience, the group interaction provides them reassurance that they are all in the same initial state of confusion.

After the firms have had the supplementary material for approximately two weeks, a test should be given to ensure that everyone has achieved the desired level of understanding. Those students who have problems should be assisted by their groups as much as possible, thereby delegating educational responsibility to the students. After the firms have made their first trial decision, they should elect a company president. The trial decision period normally allows the natural leader time to surface within each group.

Due to the nature of the simulation, students rarely require any incentive other than the competitive interaction within the industry to perform the research necessary for each decision. After two to three decisions emphasis passes from the mechanics of the game to strategy. A technique used quite successfully has been to allow the firm members to select their president and have him grade the members of his firm while the instructor grades the president. Grading is based on company performance and individual participation, with emphasis on the latter. The rationale for this approach is that the student with the least business background may benefit the most.

Since the mechanics of keypunching and running the program will have already been negotiated with the computer department personnel, each decision session consists simply of delivering the decisions of the firms to the computer department and picking up the print-outs after the program has been run. It is advisable to run the game for a least three simulated years as this will allow the dominant firms within the industry to surface and eliminate the possibility of a firm winning due to a few lucky guesses. It is recommended that decisions and analysis be made during class time for the first three or four simulated periods until the students become familiar with the mechanics of the game. After the fourth decision, students normally require less time and may meet outside of class. Electronic calculators are extremely helpful during the decision-making process and should be made available to the firms if possible.

RESULTS OF CLASSROOM APPLICATION of COMPUTER-BASED SIMULATION MODELS

Business simulation models have been in use at Lower Columbia College in Longview, Washington since 1971. During this period approximately 158 students have participated in business games. Questionnaires were administered to the students at the end of each academic quarter and the results are illustrated in Table 1.

Statements by students with regard to category designated as "other" in Table 1 were 88% favorable and consisted primarily of suggestions on how to improve the effectiveness of the games in the class.

BENEFITS OF USING COMPUTER-BASED SIMULATION MODELS IN THE CLASSROOM

As a result of the utilization of simulations in the classroom the student experiences the following benefits:

1. The student is introduced to a realistic application of many of the principles and theories which has been taught in the classroom. The student's experiences with actual application reinforces his understanding and retention of the subject matter.

2. Students experience a competitive environment in which communication and group participation are extremely important.

TABLE 1

RESULTS OF STUDENT PARTICIPATION in COMPUTER-BASED SIMULATION MODELS

		Students	%
A.	Informative and Enjoyable	130	82
B.	Confusing or Difficult	15	10
C.	Other	13	8
	Total	158	100

This has definite relevance with regard to a future employment environment.

3. Students are required to call upon the use of many related areas ancilliary to the specific course, which results in their gaining a greater appreciation of the importance of related areas.

4. Students are given a conceptual introduction to the uses of the computer.

5. The experience of participating in a competitive dynamic environment generates enthusiasm and a desire to understand more about business environments and related subjects.

Instructors benefit by providing the student with a vehicle with significant educational value while concomitantly being enjoyable and self-regulating. The student interaction in the business game also results in search behavior in which case the instructor becomes a resource by demand instead of by assignment.

SUMMARY

Computer-based simulation models provide a means of generating enthusiasm within students while providing a significatnt, dynamic educational experience. The use of business games in the classrooms is no longer restricted to graduate and upper-division courses or to instructors possessing computer expertise. Access to computer hardware and a working relationship with campus computer personnel are all that is required to get a simulation model "up and running".

Community college instructors may have to develop some supplementary materials, depending on the educational background of their students. However, instructors are encouraged to introduce students to business games as early as possible because of the value of the experience to the student. Actual use of business games at Lower Columbia College has provided favorable results and justifies the implementation of computer-based simulation model for freshmen and sophomore business students at other community colleges.

BIBLIOGRAPHY

1. Boone, Louis, E., Marketing Strategy. Columbus, Ohio: Charles E. Merrill Publishing Company, 1971.

2. Graham, Robert, and Gray, Clifford, Business Games Handbook, New York, New York: American Management Association, 1969.

3. Henshaw, Richard C., and Jackson, James R., The Executive Game. Homewood, Illinois: Richard D. Irwin, Inc., 1972.

4. McFarlan, Warren F., McKenney, James L., and Seiler, John A., The Management Game. New York, New York: The Macmillan Company, 1970.

5. Smith, W. Nye, Estey, Elmer E., and Vines, Ellsworth F., Integrated Simulation. Cincinnati, Ohio: South-Western Publishing Company, 1968.